
Pricing Mechanism of Banking Products

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Abstract:

The pricing problem of banking services is quite versatile and requires resolving a number of issues. In the context of a competitive banking environment and the expansion of the range of banking services, it becomes necessary to find the most effective mechanisms for making price offers.

As a rule, the customer is interested not simply in the banking service, which is available in almost any second-tier bank, but in high quality and affordability. Based on the synthesis of the quality management process of banking services and the pricing process, this article proposes a model for setting prices for banking products and services with regard to their quality.

The starting point for the research was the works of domestic and foreign authors on the essence of banking marketing, the relationship between the price of the banking product and its quality, and the problem of choosing possible quality assessment methods by examining a bank credit.

The authors' model of an algorithm for finding the price/quality ratio of the banking service is offered, which gives a step-by-step description of the process of assessing the characteristics of the banking service. The article shows what opportunities are opened for the bank subject to the assessment of the price/quality ratio of the banking service.

Keywords: Bank leader, service, product, price, quality, marketing.

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1. Introduction

In the modern context, when banks compete for various types of services at different price levels, special importance is attached to the quality of customer service, expressed by the price/quality ratio.

In the scientific community, there are two approaches to pricing: one that is based on the labor value theory – a cost approach, and a second that is based on the subjective value theory – a value approach. These concepts, as a rule, oppose each other, because in the cost approach, the price is determined on the basis of costs for production and sales, and in the value approach – on the basis of consumer properties of the goods that can satisfy customer requests. These pricing approaches complement each other and contribute to a more complete consideration of factors that affect the level of prices and strengthen the bank's marketing positions. Therefore, one can talk about the interrelationship between these approaches to pricing of banking products with regard to their quality.

The complexity and multidimensionality of pricing problems stems from a wide range of issues related to the insufficiently developed organizational and methodological tools in commercial banks in the context of modernization of the national banking system. The search for new forms and methods of the effective functioning of domestic banks is an urgent problem in which the issues of pricing and quality occupy leading positions. These facts make it possible to relate the given problem to the number of the most relevant in modern science.

2. Literature review

In the course of the study, considerable attention was paid to the approaches revealed in the works of Gronroos (1982), Deming (1994), McDougall and Levesque (2000), Lee (2000), Babich *et al.* (2015), Japparova and Rupeika-Apoga (2017). Various aspects of the banking theory were studied on the basis of the research of Russian economists such as Seitkassimov and Mussina (2012), Mitrokhin *et al.* (2016), Gubin *et al.* (2017) and Albekova (2008).

The purpose of this study is to develop a financial and marketing pricing mechanism of banking products, taking into account the quality of their provision.

3. Results and discussion

To set prices for banking products with regard to their quality, there is a need for a large amount of marketing information. To do this, the bank should establish relevant departments. The marketing approach implies a transition to new management methods and changes in the structural and functional organization of the bank. To determine the price/quality relationship we proposed a model research framework, which by its economic nature shows the degree of deviation of the

service offered by the tester bank from the benchmark service offered by the bank leader. A three-staged algorithm for finding the price/quality ratio is shown in Figure 1. Currently, banking services are in demand because of their affordable prices. Credit transactions are in particular demand among the population. However, it is well known that the quality of banking services often does not satisfy the customer. The delivery of high-quality service becomes the norm for the consumer, ceasing to be an indicator of differentiation. Let it not be overlooked that the customer, paying the price of the product, buys "the right to quality", which shows quality as an economic value in a new perspective. This "right to quality" means:

- For the customer – a reasonable level of expectation to buy high-quality banking services at a low price.
- For the bank – a reasonable level of expectation to offer high-quality banking services with the greatest possible benefit.

Banks need to investigate the relationship between the price of the banking service and the quality of its provision as well as to offer the highest quality at the lowest price. The advantages of the analysis of the price/quality ratio of the banking product are as follows:

- competitors' offers are considered;
- a strategy of retention (or expansion) of the sales market is developed.
- Stage 1. The goal of this stage is to select the nearest competitors in terms of offers. The stage includes the identification of the bank tester for whose products the price will be set.
- Stage 2. Information on price characteristics of banking services of the banks studied is collected.
- Stage 3. A survey/questionnaire of the working group consisting of the bank's clients and the expert group consisting of specialists from bank units is carried out.

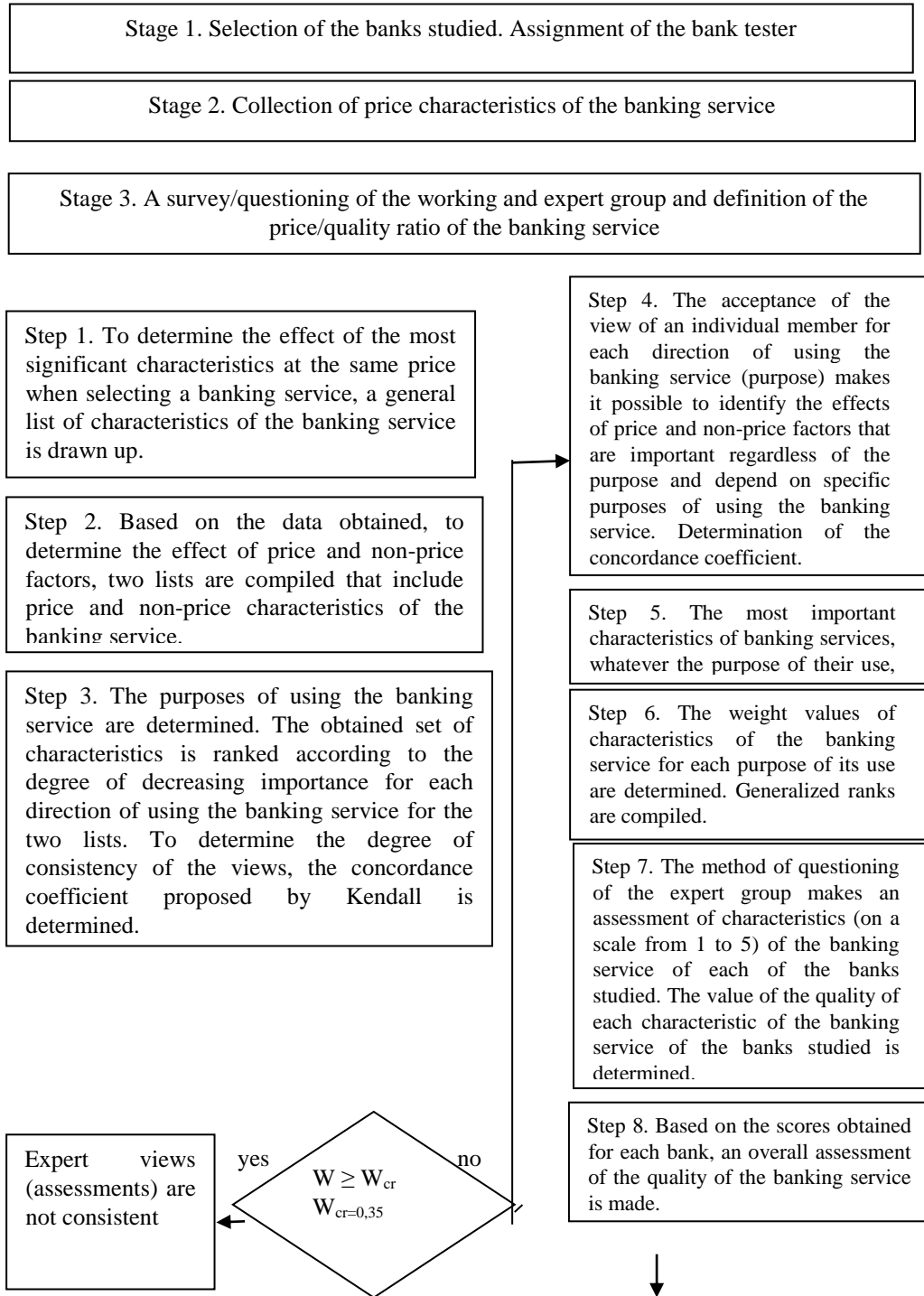
Stage 1: This stage includes 10 steps, quite clearly presented in Figure 1. Particular attention should be paid to the Kendall concordance coefficient:

$$W = \frac{12}{m^2(n^3 - n)} \cdot S, \quad (1)$$

where $S = \sum_{j=1}^n \left(\sum_{i=1}^m R_{ij} - \frac{m(n+1)}{2} \right)^2$ is the number of analyzed objects, m – the

number of experts, R_{ij} – the rank of the j -th object, which was assigned by the i -th expert.

Figure 1. An algorithm for finding the price/quality ratio of the banking service



Step 9. The position of the banking service in terms of costs and quality is determined.

Step 10. The bank leader is determined. The correspondence of the fair price of the bank tester's service is set up, based on the characteristics and price of the bank leader's service.

Note: Complied by the authors. W is the concordance coefficient, W_{cr} is the critical value of the concordance coefficient.

When expert views are completely opposite, the concordance coefficient is zero ($W = 0$). In the presence of links (of the same values), formula (1) takes the following form:

$$W = \frac{1}{12 m^2 (n^3 - n) - m \sum_{j=1}^n T_j} \sum_{j=1}^n \left(\sum_{i=1}^m R_{ij} - \frac{m(n+1)}{2} \right)^2 \quad (2)$$

$$\sum_{i=1}^{L_j} (n_i^3 - n_i)$$

where $T_j = \frac{\sum_{i=1}^{L_j} (n_i^3 - n_i)}{12}$, while L_j is the number of links, n_i is the number of elements in the i -th link for the j -th expert.

The use of the rank method allows us to state that the expert will never have the same values. In order to verify the significance of the concordance coefficient W , two statistical hypotheses are formulated:

H0: expert views (assessments) are not consistent;

H1: expert views (assessments) are consistent.

The null hypothesis is rejected if $W > W_{cr}$. The significance of the concordance coefficient is difficult to verify for a small number of objects. For small values, there are incomplete tables. If the number of objects (n) is greater than 7, then the null hypothesis deviates at an approximate level of significance α , if

$$W \geq W_{cr} = \frac{\chi_{\alpha v}^2}{m(n-1)}, \quad (3)$$

where $v = n - 1$ are the degrees of freedom for the distribution of χ^2 (Babich *et al.*, 2015).

In banking products selected for the approbation of the pricing mechanism with regard to quality, there is no process of collecting and analyzing marketing information or a quality and pricing management system. Therefore, the mechanism for setting prices for banking products, taking into account their quality, was tested in a simplified version. Let us assume that the bank set the task to transfer part of its products to pricing taking into account the quality of provided banking services. For the study, a bill was chosen as a banking product. One bank tester was chosen from the banks studied, for whose products prices will be set.

Two groups were formed: a working group consisting of bank customers and an expert group consisting of managers and specialists from bank units responsible for a particular product. Let us investigate the widespread banking product – a bill – according to the above algorithm. The survey method of the working group helps to compile a list of characteristics of the banking product, which have a significant influence on consumer choice with equal price factors.

To identify the influence of price and non-price factors of the banking product, the working group was offered two options for the questionnaire. The first one proposed listing all the characteristics of the bill that will influence the choice of this product. The second option proposed specifying the characteristics of the bill, which influence the choice of a particular product provided that price factors are the same in all banks.

Stage 2: On the basis of the obtained characteristics, the most frequent among the members of the working group are selected. The list of the obtained characteristics is analyzed, summarized, and reduced. To determine the influence of price and non-price factors of the banking product, two lists of characteristics were compiled. The first list included both non-price and price characteristics, the second – only non-price characteristics of the bill.

Stage 3: The working group ranks the obtained set of characteristics of the banking product by the degree of diminishing significance. Customer needs are determined by the purpose of using a bill. The following main purposes were defined: accumulative investment of funds, purchase of a bill for settlements, receipt of money on a bill, acceptance of a bill as a pledge, transportation of a sum of money from one point to another. Each purpose determines its order of importance of the characteristics of the bill. The members of the working group ranked the characteristics of the bill for each direction of its use for two lists: with price and non-price characteristics and only with non-price ones. The concordance coefficient was calculated for all assessments of the working group.

The critical value of the concordance coefficient is 0.35 (Babich *et al.*, 2015). Thus, the expert opinions obtained can be considered consistent. To determine the influence of price and non-price factors on consumer choice, it was decided that the views of the members of the working group on each direction of using the bill could

be taken as the opinion of an individual member. Thus, we get 35 members of the working group instead of 7. In this case, it is possible to identify the characteristics of the bill that are important, regardless of the purpose of its use, and the characteristics that depend on specific purposes. Combined data for the two lists are presented below in Tables 1 and 2.

Table 1. Characteristics of the bill

No	Characteristics	Rank sum in the areas of use of the bill				
		1: 1-7	2: 1-7	3: 1-7	4: 1-7	5: 1-7
1	Reliability of the bank bill drawer	71	80	81	71	58
2	Reliability of the bill form	40	61	66	50	56
3	Liquidity of the bill	34	57	51	63	54
4	Payment rate of the bill	26	45	46	32	31
5	Geographical coverage	11	52	22	11	78
6	Discount rate for early accounting of the bill	67	31	69	63	19
7	Price of the bill form	62	63	10	59	63
8	Cost of receiving cash on the bill	44	34	59	56	52
9	Bank errors and speed of their correction	31	23	27	34	23
10	Convenience of office location and its interior	64	25	52	49	56
11	Speed and simplicity of transaction registration	38	37	36	37	23
12	Communication with a bank employee	58	38	27	21	33
The concordance coefficient $W = 0,24$						
<i>Note: Calculated by the authors.</i>						

Table 2. Non-price characteristics of the bill

No	Characteristics	Rank sum in the areas of use of the bill				
		1: 1-7	2: 1-7	3:1-7	4: 1-7	5: 1-7
1	Reliability of the bank bill drawer	63	57	55	57	56
2	Reliability of the bill form	32	38	53	51	45
3	Liquidity of the bill	45	48	53	56	34
4	Payment rate of the bill	41	44	39	40	47
5	Geographical coverage	14	44	24	22	48
6	Bank errors and speed of their correction	24	17	19	21	15
7	Convenience of office location and its interior	48	35	42	33	39
8	Speed and simplicity of transaction registration	23	13	16	12	22
9	Communication with a bank employee	25	19	14	23	9
The concordance coefficient $W = 0,57$						
<i>Note: Calculated by the authors.</i>						

Tables 1 and 2 show that the importance of characteristics varies depending on the purpose of using the bill. The presence of price characteristics in the list both changes the rank of consumer preferences by non-price characteristics and worsens the concordance coefficient. This is due to the fact that people always face a choice between price and quality. Therefore, some people tend to look for a product with a

minimum price, some are looking for the best quality product, and others are looking for an optimal product in terms of price and quality. When the price or quality is fixed, the consistency of views is improved. Since the definition of price in our case is the ultimate goal, price factors will be excluded from the characteristics of the bill. Further, we will consider only non-price characteristics.

Based on the results of the tables, we can distinguish the following characteristics of the bill for any purpose of its use: reliability of the bank, reliability of the bill form, liquidity of the bill, payment speed. Of particular importance are geographical coverage and convenience of office location.

After analyzing the data of the previous stage, the weight of each characteristic of the banking product is calculated. Then the expert group evaluates the non-price characteristics of the banking product of each bank studied with values from 1 to 5. 5 corresponds to the best state of characteristic, and 1 – to the worst or none at all. The banks studied will be designated as Bank 1, Bank 2, Bank 3, Bank 4, Bank 5 and Bank 6. Based on the obtained scores of the characteristics of bills of the banks studied and their weights, an overall assessment of the quality of the bill was calculated for each bank (Table 3).

Table 3. Final assessment of the quality of bills

No	Bank bill drawer	Bill assessment
1	Bank 2	4,779
2	Bank 1	4,680
3	Bank 6	4,653
4	Bank 4	4,511
5	Bank 3	4,426
6	Bank 5	4,415

Note: Calculated by the authors.

The survey method and the search on the Internet help collect price characteristics of banking products of the banks studied. The price of the bill is understood as all the costs that a client bears, using this product. The costs of the bill are made up of the cost of a form, a discount (when it is sold before the due date), and a payment for the receipt of cash. The method of telephone survey and the banks' websites helped collect information on the costs of bills (Table 4).

Table 4. Costs for the use of the bill

No	Bank	Accounting rates by the payment date, % per annum				Price of the bill form, tenge	Commission for receiving cash, % of the amount
		Up to 1 month	Up to 3 months	Up to 6 months	More than 6 months		
1	Bank 1	6	10	12	15	206,5	0,5

2	Bank 2	8	9	13	16	400	0
3	Bank 3	10	13	13	13	150	0,3
4	Bank 4	21	21	21	21	295	1
5	Bank 5	11	14	20	23	0	0,5
6	Bank 6	16	19	20	20	118	0,5
<i>Note: Calculated by the authors.</i>							

Let us take a bill with a nominal value of 1,000,000 tenge as an example. The main costs were determined for this bill – for purchase, for sale before the due date and for receipt of cash. The terms before payment were 1 month, 3 months, 6 months and 1 year. For this bill, we calculate the costs for each bank in tenge (Table 5).

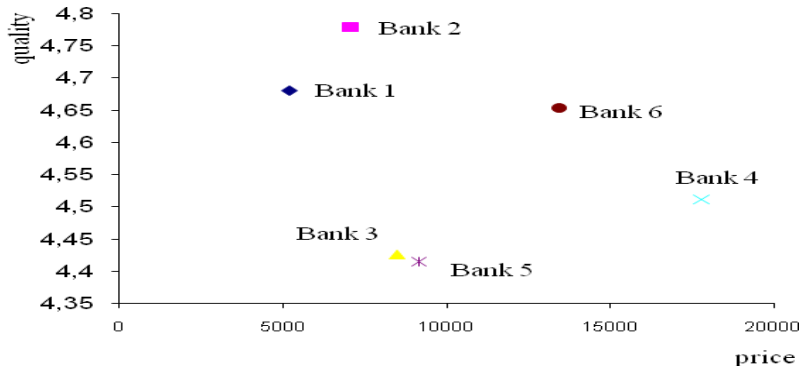
Table 5. Calculation of the costs for the bill

No	Bank	Payment for the bill form	Discount, tenge / Commission for receiving cash, tenge			
			Term remaining before payment			
			1 month	3 months	6 months	1 year
1	Bank 1	206,50	5000,00 / 4975,00	8333,33 / 4958,33	10000,00/ 4950,00	12500,00/ 4937,50
2	Bank 2	400,00	6666,67 / 0,00	7500,00 / 0,00	10833,33/ 0,00	13333,33/ 0,00
3	Bank 3	150,00	8333,33 / 2975,00	10833,33/ 2967,50	10833,33/ 2967,50	10833,33/ 2967,50
4	Bank 4	295,00	17500,00/ 9825,00	17500,00/ 9825,00	17500,00/ 9825,00	17500,00/ 9825,00
5	Bank 5	0,00	9166,67/ 4954,17	11666,67/ 4941,67	16666,67/ 4916,67	19166,67/ 4904,17
6	Bank 6	118,00	13333,33/ 4933,33	15833,33/ 4920,83	16666,67/ 4916,67	16666,67/ 4916,67
<i>Note: Calculated by the authors.</i>						

Let us consider various situations. The client can buy a bill, and give in calculations. In this case, the price for it will be only the cost of the form. If the client purchases a bill and takes into account before the payment date, then the price will be the cost of the form and the discount value. Accordingly, if the client receives cash, then a commission will be added to this sum.

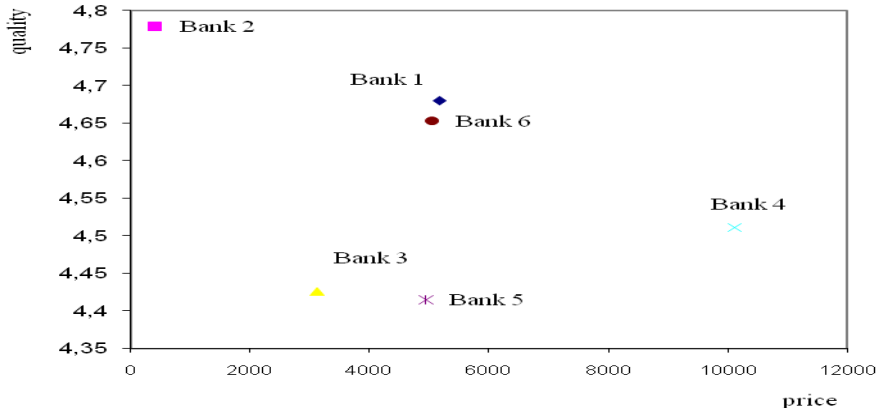
We will display the position of the banks' bills by costs and quality for cases of non-cash and cash receipt of funds on the bill during 1 month before the payment date (Figures 3 and 4).

Figure 3. Positioning of bank bills for non-cash transfer of funds when accounted for 1 month before the payment date



It can be seen that the highest quality at the lowest price is provided by Bank 2. Bank 1 is closest to it. Bank 6, similar to Bank 1, charges a large fee for high quality. This can be associated with high costs of the bank. Bank 4 charges a large fee for medium quality. This strategy is called a "cash cow". The bank is likely to refuse to work with bills. Bank 3 and Bank 5 set high prices for minimum quality. We can assume that they believe that customers will not be able to determine the level of quality and therefore there is no reason to raise it.

Figure 4. Positioning of bank bills for cash transfer of funds when accounted for 1 month before the payment date



Further, the price/quality ratio for products of the banks studied is determined. The values of quality assessment and price characteristics are already known. Since we took one time point, the value of elasticity is not essential. Therefore, the price of a quality unit is obtained by a simple relation. Let us compare the prices of quality units of bills of various banks for the situation of early accounting for non-cash and cash transfer of funds (Tables 6 and 7).

Table 6. The cost of one quality unit of the bill for non-cash transfer of funds (tenge)

No	Bank	Term remaining before payment			
		1 month	3 months	6 months	1 year
1	Bank 1	1112,55	1824,84	2180,98	2715,20
2	Bank 2	1478,75	1653,13	2350,65	2873,79
3	Bank 3	1916,61	2481,43	2481,43	2481,43
4	Bank 4	3945,04	3945,04	3945,04	3945,04
5	Bank 5	2047,98	2606,52	3723,59	4282,13
6	Bank 6	2891,07	3428,39	3607,49	3607,49

Note: Calculated by the authors.

A bank that has a low unit quality cost can create products of a higher quality than competitors at similar costs. In case of a non-cash transfer during 1 month before the payment date, the minimum price was fixed at Bank 1, and in case of a cash transfer – at Bank 2. Bank 4 has the most expensive quality.

Table 7. The cost of one quality unit of the bill for cash transfer of funds (tenge)

No	Bank	Term remaining before payment			
		1 month	3 months	6 months	1 year
1	Bank 1	2175,64	2884,36	3238,73	3770,27
2	Bank 2	1478,75	1653,13	2350,65	2873,79
3	Bank 3	2588,75	3151,87	3151,87	3151,87
4	Bank 4	6123,18	6123,18	6123,18	6123,18
5	Bank 5	3154,82	3710,56	4822,05	5377,80
6	Bank 6	3951,38	4486,01	4664,22	4664,22

Note: Calculated by the authors.

Further, the bank leader is selected by the banking product. In order to finally determine the bank leader, we use data on the total amount of outstanding bills of each bank (Table 8).

Table 8. Amount of outstanding bills

No	Bank bill drawer	Amount of outstanding bills, thousand tenge
1	Bank 1	180 054,00
2	Bank 2	47 293 774,00
3	Bank 3	492 066,00
4	Bank 4	116 666,00
5	Bank 5	50 000,00
6	Bank 6	4 970 864,00

Note: Calculated by the authors.

Bank 2 will be the bank leader. Bank 1 will be the bank tester.

The fair price of the banking product of the bank tester is determined based on the characteristics and price of the banking product of the bank leader. Take the cost of a

non-cash transfer 1 month before the payment date. The bill costs of Bank 2 are equal to 7,066.67 tenge. The price for a quality unit of the bill of Bank 2 is 1,478.75 tenge. The quality of the bill of Bank 2 is 4.78. The bill costs of Bank 1 are equal to 5,206.50 tenge. The price for a quality unit of the bill of Bank 1 is 1,112.55 tenge. The quality of the bill of Bank 1 is 4.68.

Thus, if the bank leader will provide the same quality as the bank tester, the bill costs will be $4.68 \cdot 1,478.75 = 6,920.55$ tenge. As a result, it can be stated that Bank 1 can raise the price for the bill by 1,714.05 tenge.

4. Conclusions

The following sequence of actions was carried out for the bill:

- 1) A survey and questionnaire of the working group were used to compile a list of characteristics of the banking product, which have a significant influence on consumer choice with equal price factors.
- 2) On the basis of the obtained set of characteristics, the most frequent among the members of the working group were selected.
- 3) By the method of questioning, the working group ranked the obtained set of characteristics of the banking product by the degree of diminishing significance.
- 4) After analyzing the data of the previous stage, the weights of each characteristic of the banking product were calculated.
- 5) By the method of questioning of the expert group, the characteristics of the banking product of each bank were evaluated from 1 to 5.
- 6) With the help of the Internet, the price characteristics of the banking products of the banks studied were collected.
- 7) The price/quality ratio for the products of the banks studied was determined.
- 8) The bank leader was determined by the banking product.
- 9) The fair price of the banking product of the bank tester was determined based on the characteristics and prices of the banking product of the bank leader.

As it turned out, it is necessary to increase the fee for the form by 200 tenge and the commission for receiving cash on the bill by 0.1%. In general, the increase will be 500 tenge. Our survey of Bank 1 clients about the possibility of this change showed that no client expressed a desire to refuse to use the bank's bills. New customers contacting the bank for the first time on the issue of bills responded in a similar way. Therefore, this indicates that the new price is well received by customers, reasonable and consistent with quality.

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